PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference AZ06-005WOWW	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/KR 2006/000241	International filing date *(day/month/year)* 20 January 2006 (20.01.2006)	(Earliest) Priority Date *(day/month/year)* 1 February 2005 (01.02.2005)
Applicant LG ELECTRONICS INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
      ☒ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
   b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see continuation of this first sheet.

2. ☐ **Certain claims were found unsearchable** (see continuation of this first sheet)

3. ☐ **Unity of invention is lacking** (see continuation of this first sheet)

4. With regard to the **title,**
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   ☐ the text is approved as submitted by the applicant.
   ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in the continuation of this first sheet. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings,**
   a. the figure of the drawings to be published with the abstract is Figure No. 2
   ☐ as suggested by the applicant.
   ☐ as selected by this Authority, because the applicant failed to suggest a figure.
   ☒ as selected by this Authority, because this figure better characterizes the invention.
   b. ☐ none of the figures is to be published with the abstract.

International application No.
PCT/KR 2006/000241

Continuation of first sheet

Continuation No. IV:

Text of the abstract

(Continuation of item 5 of the first sheet)

A driving apparatus for a washing machine is disclosed which includes a dual-rotor type motor. The driving apparatus includes a tub (2) which contains washing water, and receives a drum (3) such that the drum (3) is rotatable, a dual rotor which includes an outer rotor (10) including magnets (11) supported by an inner peripheral surface of the outer rotor (10), and an inner rotor (20) arranged inside the outer rotor (10), the inner rotor (20) including magnets (21) supported by an outer peripheral surface of the inner rotor (20), a bearing housing (H) which is formed at a rear wall of the tub (2) in accordance with an insert molding method such that the bearing housing (H) is integral with the tub (2), the bearing housing (H) rotatably supporting a drum shaft (4) connecting the drum (3) and the dual rotor, a motor mounting bracket (50) which is mounted to the rear wall of the tub (2), and a stator (30) which includes a core (31), an insulator (32) enclosing the core (31), coils (34) wound around the insulator (32), a molded member (33) to enclose the insulator (32) and the coils (34) and a coupling portion (35) extending from the molded member (33), the coupling portion (35) being mounted to the rear wall of the tub (2) via the motor mounting bracket (50).

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR 2006/000241

A. CLASSIFICATION OF SUBJECT MATTER
IPC[8]: ***D06F 37/30*** (2006.01); ***D06F 37/26*** (2006.01); ***H02K 1/14*** (2006.01); ***H02K 1/27*** (2006.01); ***H02K 16/02*** (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC[8]: D06F, H02K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPODOC, WPI, esp@cenet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2004/004098 A1 (AMOTECH CO., LTD) 8 January 2004 (08.01.2004) *page 35, line 23 - page 37, line 3; figs 9c, 15* --	1-3, 6-8, 14,15
Y	EP 1094145 A2 (LG ELECTRONICS INC.) 25 April 2001 (25.04.2001) *paragraph [0023], figs 2-7* ----	1-3, 6-8, 14,15

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 January 2009 (15.01.2009)	17 February 2009 (17.02.2009)

Name and mailing address of the ISA/ AT	Authorized officer
Austrian Patent Office Dresdner Straße 87, A-1200 Vienna	SCHWARCZKOPF József
Facsimile No. +43 / 1 / 534 24 / 535	Telephone No. +36 /1/ 474-5861

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/KR 2006/000241

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
WO A 2004004098		JP	A	2008048599	2008-02-28
		US	A1	2008054740	2008-03-06
		KR	A	20040002349	2004-01-07
		US	A1	2006066173	2006-03-30
		US	A1	2004245878	2004-12-09
		WO	A1	2004004098	2004-01-08
EP A 1094145		US	A1	2006230618	2006-10-19
		KR	A	20010037518	2001-05-15
		KR	A	20010037517	2001-05-15
		DE	T2	60015045T	2006-03-02
		US	A1	2005146235	2005-07-07
		US	A1	2005144990	2005-07-07

PATENT COOPERATION TREATY

To:

BAHNG Hae Cheol
KBK & ASSOCIATES
15 th Floor Yosam Building 648-23,
Yeoksam-dong, Kangnam-gu,
Seoul, 135-080
Republic of Korea

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing *(day/month/year)*	17 February 2009 (17.02.2009)
Applicant's or agent's file reference: AZ06-005WOWW	FOR FURTHER ACTION: See paragraph 2 below
International application No.: PCT/KR 2006/000241	International filing date *(day/month/year)*: 20 January 2006 (20.01.2006)
	Priority Date *(day/month/year)*: 1 February 2005 (01.02.2005)

International Patent Classification (IPC) or both national classification and IPC
D06F 37/30 (2006.01); ***D06F 37/26*** (2006.01); ***H02K 1/14*** (2006.01); ***H02K 1/27*** (2006.01); ***H02K 16/02*** (2006.01)

Applicant: LG ELECTRONICS INC.

1. This opinion contains indications relating to the following items:

- [x] Cont. No. I — Basis of the opinion
- [ ] Cont. No. II — Priority
- [ ] Cont. No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Cont. No. IV — Lack of unity of invention
- [x] Cont. No. V — Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Cont. No. VI — Certain documents cited
- [x] Cont. No. VII — Certain defects in the international application
- [x] Cont. No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ AT **Austrian Patent Office** Dresdner Straße 87, A-1200 Vienna	Authorized officer SCHWARCZKOPF József
Facsimile No. +43 / 1 / 534 24 / 535	Telephone No. +36 /1/ 474-5861

Continuation No. I

Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of

a translation from the original language into the following language: ENGLISH, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

Continuation No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims **1-31**	**YES**
	Claims **----**	**NO**
Inventive step (IS)	Claims **4, 5, 9-13, 16-31**	**YES**
	Claims **1-3, 6-8, 14,15**	**NO**
Industrial applicability (IA)	Claims **1-31**	**YES**
	Claims **----**	**NO**

2. Citations and explanations:

The following documents have been cited in the search report:

D1: WO 2004/004098 A1

D2: EP 1094145 A2

Document D1 relates to a radial core type double rotor brushless direct-current motor in which a double rotor structure is employed with inner and outer rotors which are doubly disposed and thus a stator core is completely divided. The motor includes a rotational shaft which is rotatably mounted on a housing of an apparatus, cylindrical inner and outer yokes which are rotatably mounted on the center of the housing, inner and outer rotors including a number of magnets which are mounted with the opposing polarities on the outer surface of the inner yoke and the inner surface of the outer yoke, and a number of cores assemblies which are installed between the inner and outer rotors in which a number of coils are wound around a number of division type cores, respectively.

Document D2 describes a structure of driving unit in a drum type washing machine including a tub mounted inside of a cabinet, a drum mounted inside of the tub, a shaft connected to the drum mounted inside of the tub for transmission of a driving force from a motor to the drum, a front bearing and a rear bearing mounted on an outer circumference of the shaft at opposite end portions thereof respectively, a bearing housing built in a central portion of a rear wall of the tub for supporting the front bearing, a rotor composing the motor together with the rotor, and coupled to the rear end portion of the shaft, a stator fixed to the tub rear wall inward of the rotor to compose the motor together with the rotor, a connector serration coupled to the outer circumference of the shaft in front of the rear bearing and fixed to the rotor, for transmission of a rotating power from the rotor to the shaft,; and a bearing bracket fixed to the rear wall of the tub to cover an outside of the rotor and support the rear bearing.

The present application relates to a driving apparatus for a washing machine that includes a tub which contains washing water, and receives a drum such that the drum is rotatable, a dual rotor that includes an outer rotor including magnets supported by an inner peripheral surface of the outer rotor, and an inner rotor arranged inside the outer rotor, the inner rotor including magnets supported by an outer peripheral surface of the inner rotor, a bearing housing which is formed at a rear wall of the tub in accordance with an insert molding method such that the bearing housing is integral with the tub, the bearing housing rotatably supporting a drum shaft connecting the drum and the dual rotor, a motor mounting bracket which is mounted to the rear wall of the tub, and a stator which includes a core, an insulator enclosing the core, coils wound around the insulator, a molded member to enclose the insulator and the coils and a coupling portion extending from the molded member, the coupling portion being mounted to the rear wall of the tub via the motor mounting bracket.

Neither of the prior art documents cited in the search report discloses a washing machine with a double rotor type motor including a bearing housing integrated in a rear wall of the tub for supporting a drum shaft connected to the double rotor, and a motor mounting bracket mounted to the rear wall of the tub, and a stator of the motor mounted to the rear wall of the tub via the motor mounting bracket or to the motor mounting bracket, consequently the subject matter of independent claims 1, 16, 24, 26, 28 and 30 is new.

Nevertheless, document D1 discloses a double rotor type motor for a washing machine, and document D2 describes a structure of driving unit of the tub with a bearing bracket fixed to the rear wall of the tub serving as motor mounting bracket, so the subject matter of claim 1 seems to lack inventive step.

Neither of dependent claims 2, 3, 6-8, 14,15 contains any feature, which, combined with the features of any claim to which they refer, defines subject matter that meets the requirement for inventive step, because the features are disclosed in the above mentioned documents or considered to be obvious to a person skilled in the art as common general knowledge.

Neither of the prior art documents cited in the search report discloses or suggests the subject matter of dependent claims 4, 5, 9-13, consequently the subject matter of these claims involve an inventive step.

The subject matter of independent claim 16 differs from the subject matter of claim 1 that the stator is mounted to the motor mounting bracket,wich is not even suggested by the prior art documents, so the subject matter of independent claim 16 and dependent claims 17-23 involves an inventive step.

Similarly, the subject matter of independent claims 24, 26, 28, and 30 comprises feature not known from the prior art documents, consequently the subject matter of these claims and all other claims that refer to said claims involve an inventive step.

Industrial applicability is given.

International application No.
PCT/KR 2006/000241

Continuation No. VII:

Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

The subject of claim 6 as "motor" is erroneous.

Continuation No. VIII:

Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
